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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.
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09/602,345 06/23/00 OAKLEY

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EXAMINER

MM91/1031

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ART UNIT

PAPER NUMBER

2861

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10/31/01

Please find below and/or attached an Office communication concerning this application or proceeding.

Commissioner of Patents and Trademarks

Office Action Summary

Application No.

09/602,345

Applicant(s)

OAKLEY, WILLIAM S.

Examiner

Hai C Pham

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 20 August 2001.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-22 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-22 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on _____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____
- 4) ☐ Interview Summary (PTO-413) Paper No(s). _____
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other:

DETAILED ACTION

Specification

1. The amendment filed 08/20/01 is objected to under 35 U.S.C. 132 because it introduces new matter into the disclosure. 35 U.S.C. 132 states that no amendment shall introduce new matter into the disclosure of the invention. The added material which is not supported by the original disclosure is as follows: "In another embodiment, a multi-beam optical recording system having a first array and a second array of light sources, such as VCSELs, oriented so that an objective lens focused the output from each of the arrays in the direction of an optically sensitive recording medium", which implies that the first array and the second array of the light sources act as two writing arrays of light sources, and which is used to support amended claim 4. Such matter was not originally part of the disclosure at the time the application was filed.

Applicant is required to cancel the new matter in the reply to this Office Action.

Claim Rejections - 35 USC § 112

2. The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

3. Claim 4 is rejected under 35 U.S.C. 112, first paragraph, as containing subject matter which was not described in the specification in such a way as to reasonably

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convey to one skilled in the relevant art that the inventor, at the time the application was filed, had possession of the claimed invention.

- Amended claim 4 recites the following limitation "each VCSEL of said first and said second VCSEL array is capable of writing a separate track on said target medium," indicating that both first and second VCSEL arrays are two writing light source arrays. Such claimed feature was not supported by the specification at the time the application was filed.

Applicant is required to cancel the new matter in the reply to this Office Action.

4. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

5. Claim 7 is rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

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- Claim 7 recites the following limitation “wherein *said array* of modulatable light sources comprises at least one line of modulatable light sources positioned at an angle”, which appears to be ambiguous in that it is not known whether the Applicant is intended to claim the first array or the second array of light sources or both.

Appropriate correction is required.

Claim Rejections - 35 USC § 102

6. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

7. Claims 1, 5, 7-10 are rejected under 35 U.S.C. 102(b) as being anticipated by Nagasaki et al. (U.S. 5,508,990.)

Nagasaki et al. discloses an optical recording and reproducing apparatus comprising a first array of modulatable light sources, a second array of modulatable light sources (laser diode arrays 88₁-88₅, being modulated by the laser diode driver,) and an objective lens (20) positioned relative to the first array and the second array of modulatable light sources such that the objective lens is capable of focusing at least one light beam from each of the first array and the second array of modulatable light sources on a target medium (optical recording medium.)

With regard to claims 5, 7-10, Nagasaki et al. further discloses the followings:

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- the modulatable light sources being spaced at regular intervals (as indicated by the beam spots formed on the track 22, which are spaced at regular intervals,)
- one of the array of the modulatable light sources comprising at least one line of modulatable light sources positioned at an angle relative to a direction of movement of the target medium (Figs. 4, 5A,)
- each modulatable light sources of said at least one light modulatable light sources being associated with a separate path on said target medium (Fig. 18,)
- a polarizing beam-splitter (16, Fig. 17) located between the arrays of modulated light sources and the objective lens (20,) and a circularly polarizing element (18) adjacent to the polarizing beam-splitter,
- the circularly polarizing element comprising a quarter wave plate ($\lambda/4$ plate 18.)

Claim Rejections - 35 USC § 103

8. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

9. Claims 1-4, 6 are rejected under 35 U.S.C. 103(a) as being unpatentable over Nagasaki et al. in view of Jewel et al. (U.S. 5,526,182.)

Nagasaki et al. discloses all the basic limitations of the claimed invention except for the arrays of modulatable light sources comprising VCSEL arrays, which are

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embedded in a substrate, and the center-to-center distances between the light sources being 40 microns.

Nevertheless, Jewell et al. discloses an optical recording system comprising an array of modulatable light sources (array 35, Fig. 7,) which can perform both reading and writing data (col. 5, lines 59-63,) and an objective lens (focusing lens 47) positioned relative to said array of modulatable light sources such that said objective lens is capable of focusing at least one light beam from said array of modulatable light sources on a target medium (optical recording medium 8,) the array of modulatable light sources comprising an array of VCSEL (Fig. 7,) and said VCSEL being embedded in a substrate (col. 4, lines 1-4.)

It would have been obvious at the time the invention was made to a person having ordinary skill in the art to modify the device of Nagasaki et al. by incorporating VCSEL arrays as light source arrays as taught by Jewell et al. By doing so it is possible to provide plural optical beams capable of being focused on adjacent tracks of the optical medium for simultaneous writing of data to adjacent tracks.

with regard to claim 6, Jewell et al. further teaches the spacing between the light sources being set at 32 μm instead of being at least 40 μm as claimed. However, it is well known in the art that such the center-to-center distance or spacing between the light sources are dictated by the spacing between tracks of the recording medium as well as the magnification of the optical system, as Jewell et al clearly indicates at col. 4, lines 51-64. Therefore, it would have been obvious at the time the invention was made to a person having ordinary skill in the art to modify the device of Nagasaki et al., as

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modified by Jewell et al., to set the center-to-center distance between the light sources at least 40 μm to conform with the track spacing and the magnification of the optical system such that each VCSEL of the VCSEL arrays is able to write a separate track on the recording medium.

10. Claims 11–13 are rejected under 35 U.S.C. 103(a) as being unpatentable over Brewen et al. (U.S. 5,524,105) in view of Goto (U.S. 6,084,848.)

Brewen et al. discloses a read/write optical head comprising a data writing section having a laser source array (22, Fig. 9,) a data reading section having a laser light source as an illumination source (35) for reading, and a common objective lens (56) for focusing at least one light beam of each of the laser source array of the illumination means on a target medium (43.)

However, Brewen et al. fails to disclose the illumination means being the second VCSEL array.

Nevertheless, Goto discloses an optical memory head comprising a VCSEL array that can be either commonly used for writing data onto and reading data from an optical recording medium or provided with separate writing and reading VCSEL array optical heads (col. 5, lines 20–40.)

It would have been obvious at the time the invention was made to a person having ordinary skill in the art to modify the device of Brewen et al. with the aforementioned teaching of Goto. By doing so, it is possible to provide plural optical

beams capable of being focused on adjacent tracks of the recording medium for simultaneous reading of data to adjacent tracks.

With regard to claim 13, Brewen et al. further discloses the light source array (22) comprising a plurality of individually modulated light sources and the illumination source being continuously operable light source.

11. Claim 14 is rejected under 35 U.S.C. 103(a) as being unpatentable over Brewen et al. in view of Goto, as applied to claims 11 and 12 above, and further in view of Yamaguchi et al. (U.S. 5,365,535.)

Brewen et al., as modified by Goto, discloses all the basic limitations of the claimed invention except for the objective lens being an achromatic lens.

However, Yamaguchi et al. discloses an optical information recording and reproducing apparatus, which comprises two separate optical heads (522 and 523, Figs. 23 and 25) for reading after writing information data, through an achromatic objective lens (553a, b.)

It would have been obvious at the time the invention was made to a person having ordinary skill in the art to modify the device of Brewen et al., as modified by Goto, with the aforementioned teachings of Yamaguchi et al. Doing so would provide the system with an autofocusing and tracking device for accurately reading the information data being just recorded.

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12. Claims 15-19 are rejected under 35 U.S.C. 103(a) as being unpatentable over Brewen et al. in view of Goto, as applied to claim 11 above, and further in view of Jewell et al.

Brewen et al., as modified by Goto, discloses all the basic limitations of the claimed invention except for each VCSEL of the arrays being capable of writing separate track, being located on separate or common substrate and having the same array spacing.

However, Jewell et al. discloses an optical recording system comprising an array of modulatable light sources (array 35, Fig. 7,) which can perform both reading and writing data (col. 5, lines 59-63,) and an objective lens (focusing lens 47) positioned relative to said array of modulatable light sources such that said objective lens is capable of focusing at least one light beam from said array of modulatable light sources on a target medium (optical recording medium 8,) the array of modulatable light sources comprising an array of VCSEL (Fig. 7,) and said VCSEL being embedded in a substrate (col. 4, lines 1-4,) and having same array spacing.

It would have been obvious at the time the invention was made to a person having ordinary skill in the art to modify the device of Brewen et al., as modified by Goto, with the aforementioned teaching of Jewell et al. By doing so it is possible to provide plural optical beams capable of being focused on adjacent tracks of the optical medium for simultaneous writing of data to adjacent tracks.

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13. Claims 20 and 21 are rejected under 35 U.S.C. 103(a) as being unpatentable over Brewen et al. in view of Goto, as applied to claim 11 above, and further in view of Hayashi et al. (U.S. 5,703,856.)

Brewen et al., as modified by Goto, further discloses a dichroic polarizing beam-splitter (DBS 28) being located between the writing light source array and the reading light source, a polarizing beam-splitter (PBS 34,) and a circularly polarizing plate. However, Brewen et al., as modified by Goto, fails to disclose the positional relationship between the three optical elements.

Regardless, it is well known in the art that such positional relationship between the above optical elements is mainly dictated by the positions of the writing array and the reading array relative to the objective lens. Hayashi et al., for example, discloses an optical data recording and reproducing apparatus comprising two separate light sources (141a and 141b) emitting separate writing light beam and reading light beam (143a and 143b,) the reading light source being positioned closer to the objective lens. The two writing and reading light beams are combined by the first polarizing beam splitter or half mirror (146) and then reflected by the second polarizing beam splitter (144.) The two light beams are further circularly polarized by the quarter wave plate (145) and are incident on the objective lens (147,) which converges the light beams into imaging points on the surface of the optical recording medium (148a.)

It would have been obvious at the time the invention was made to a person having ordinary skill in the art to incorporate a first polarizing beam splitter or dichroic mirror as taught by Hayashi et al. in the device of the Brewen et al., as modified by

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Goto, for the purpose of combining the two light beams for recording and reproducing information data.

14. Claim 22 is rejected under 35 U.S.C. 103(a) as being unpatentable over Brewen et al. in view of Goto, Hayashi et al. and Yamaguchi et al.

Brewen et al., as modified by Goto, discloses all the basic limitations of the claimed invention except for the positional relationship between the polarizing beam-splitters and the circularly polarizing plate, the achromatic-type objective lens, and the positional adjusting device.

However, Hayashi et al. discloses an optical data recording and reproducing apparatus comprising two separate light sources (141a and 141b) emitting separate writing light beam and reading light beam (143a and 143b,) the reading light source being positioned closer to the objective lens. The two writing and reading light beams are combined by the first polarizing beam splitter or half mirror (146) and then reflected by the second polarizing beam splitter (144.) The two light beams are further circularly polarized by the quarter wave plate (145) and are incident on the objective lens (147,) which converges the light beams into imaging points on the surface of the optical recording medium.

On the other hand, Yamaguchi et al. discloses an optical information recording and reproducing apparatus, which comprises two separate optical heads (522 and 523, Figs. 23 and 25) for reading after writing information data, through an achromatic objective lens (553a, b.)

It would have been obvious at the time the invention was made to a person having ordinary skill in the art to modify the device of Brewen et al., as modified by Goto, with the aforementioned teachings of Hayashi et al. and Yamaguchi et al. Doing so would provide the system with an autofocusing and tracking device for accurately reading the information data being just recorded.

Response to Arguments

15. Applicant's arguments filed 08/20/01 have been fully considered but they are not persuasive. With regard to Applicant's argument concerning Jewell et al. teaching a system that "cannot be used to both read and write," a system that "may be configured for either purpose," but not "created to do both," the examiner respectfully disagrees. Jewell et al. explicitly discloses a system that "allows both reading and writing of data" (col. 5, line 62,) contrary to Applicant's assertion.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Hai C Pham whose telephone number is (703) 308-1281. The examiner can normally be reached on T-F (6:30-5:00).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, N. Le can be reached on (703) 308-0750. The fax phone numbers for the organization where this application or proceeding is assigned are (703) 305-3431 for regular communications and (703) 305-3431 for After Final communications.

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Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 308-0956.

hczhi Pham

hcp
October 30, 2001